

## CLAIMS

1. A fluid dispensing system for ink-jet printing, comprising:

(a) an ink-jet ink including anionic dye colorant and from 0.05 wt% to 1.0 wt% of an anionic dispersant polymer, and

(b) a fixer composition including a cationic crashing agent that is reactive with a component of the ink-jet ink,

said fluid dispensing system configured for overprinting or underprinting the fixer composition with respect to the ink-jet ink.

2. A fluid dispensing system as in claim 1, wherein the dispensing system further includes ink-jet ink printing nozzles for printing the ink-jet ink and fixer printing nozzles for printing the fixer composition, and wherein the anionic dispersant is present in the ink-jet ink at an amount that inhibits crashing from occurring at the ink-jet ink printing nozzles.

3. A fluid dispensing system as in claim 2, wherein the ink-jet printing nozzles and the fixer printing nozzles are present on a common nozzle plate,.

4. A fluid dispensing system as in claim 2, wherein the ink-jet printing nozzles and the fixer printing nozzles are configured in a proximity such that, upon jetting, small amounts of fixer composition aerosol jetted from the fixer printing nozzles contact the ink-jet ink printing nozzles, thereby resulting in the ink-jet printing nozzles being susceptible to cross-contamination by the fixer composition.

5. A fluid dispensing system as in claim 2, wherein the ink-jet printing nozzles and the fixer printing nozzles are serviced by a common wiper.

6. A fluid dispensing system as in claim 2, wherein the ink-jet ink and the fixer composition are present in two separate ink-jet pens.

7. A fluid dispensing system as in claim 2, wherein the ink-jet ink and the fixer composition are present in two separate reservoirs of a common ink-jet pen.

5           8. A fluid dispensing system as in claim 1, wherein the anionic dye is present in the ink-jet ink at from 0.1 wt% to 6 wt%.

9. A fluid dispensing system as in claim 1, wherein the cationic crashing agent is present in the fixer composition at from 1 wt% to 5 wt%.

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10. A fluid dispensing system as in claim 1, wherein the anionic dispersant polymer is a copolymer that includes both a hydrophobic group and an anionic group.

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11. A fluid dispensing system as in claim 1, wherein the anionic dispersant polymer has a weight average molecular weight from 4,000 Mw to 50,000 Mw.

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12. A fluid dispensing system as in claim 1, wherein the crashing agent is selected from the group consisting of cationic polymers, multivalent metal ions or ionic groups, acids, and combinations thereof.

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13. A fluid dispensing system as in claim 12, wherein the crashing agent is a cationic polymer selected from the group consisting of polyvinylpyridines, polyalkylaminoethyl acrylates, polyalkylaminoethyl methacrylates, poly(vinyl imidazole), polyethyleneimines, polybiguanides, polyguanides, polyvinylamines, polyallylamine, polyacrylamines, polyacrylamides, polyquaternaryamines, cationic polyurathenes, aminecelluloses, polysacchride amines, and combinations thereof.

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14. A fluid dispensing system as in claim 12, wherein the crashing agent is a multivalent metal ion provided by a member selected from the group

consisting of multivalent metal nitrate salts, EDTA salts, phosphonium halide salts, organic acid salts, chloride salts, and combinations thereof.

15. A fluid dispensing system as in claim 12, wherein the crashing agent  
5 is an acid selected from the group consisting of succinic acid, glycolic acid, citric acid, nitric acid, hydrochloric acid, phosphoric acid, sulfuric acid, polyacrylic acid, acetic acid, malonic acid, maleic acid, ascorbic acid, glutaric acid, fumaric acid, tartaric acid, lactic acid, nitrous acid, boric acid, carbonic acid, carboxylic acids such as formic acid, chloroacetic acid, dichloroacetic acid, trichloroacetic  
10 acid, fluoroacetic acid, trimethylacetic acid, methoxyacetic acid, mercaptoacetic acid, propionic acid, butyric acid, valeric acid, caprioc acid, caprylic acid, capric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linoleic acid, cyclohexanecarboxylic acid, phenylacetic acid, benzoic acid, o-toluic acid, m-toluic acid, p-toluic acid, o-chlorobenzoic acid, m-chlorobenzoic  
15 acid, p-chlorobenzoic acid, o-bromobenzoic acid, m-bromobenzoic acid, p-bromobenzoic acid, o-nitrobenzoic acid, m-nitrobenzoic acid, p-nitrobenzoic acid, oxalic acid, adipic acid, phthalic acid, isophthalic acid, terephthalic acid, salicylic acid, p-hydrobenzoic acid, anthranilic acid, m-aminobenzoic acid, p-aminobenzoic acid, benzenesulfonic acid, methylbenzenesulfonic acid,  
20 ethylbenzenesulfonic acid, dodecylbenzenesulfonic acid, 5-sulfosalicylic acid, 1-sulfonaphthalene, hexanesulfonic acid, octanesulfonic acid, dodecanesulfonic acid, amino acids such as glycine, alanine, valine,  $\alpha$ -aminobutyric acid,  $\alpha$ -aminobutyric acid,  $\alpha$ -alanine, taurine, serine,  $\alpha$ -amino-n-caprioc acid, leucine, norleucine, phenylalanine, and combinations thereof.

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16. A method of ink-jet imaging, comprising:

- (a) jetting an ink-jet ink from ink-jet printing nozzles, said ink-jet ink including an anionic dye colorant and from 0.05 wt% to 1.0 wt% of an anionic dispersant polymer, and  
30 (b) jetting a fixer composition from fixer printing nozzles, wherein the fixer composition is overprinted or underprinted with respect to the ink-jet ink, said

fixer composition including a cationic crashing agent reactive with a component of the ink-jet ink

17. A method as in claim 16, wherein the anionic dispersant is present in the ink-jet ink at an amount that inhibits crashing from occurring at the ink-jet ink printing nozzles.

18. A method as in claim 17, wherein the ink-jet printing nozzles and the fixer printing nozzles are present on a common nozzle plate.

19. A method as in claim 17, wherein the ink-jet printing nozzles and the fixer printing nozzles are configured in a proximity such that, upon jetting, the ink-jet ink printing nozzles are susceptible to contamination from small amounts of fixer composition aerosol jetted from the fixer printing nozzles.

20. A method as in claim 17, wherein the ink-jet printing nozzles and the fixer printing nozzles are serviced by a common cleaning system.

21. A method as in claim 16, wherein the ink-jet ink and the fixer composition are present in two separate ink-jet pens.

22. A method as in claim 16, wherein the ink-jet ink and the fixer composition are present in two separate reservoirs of a common ink-jet pen.

23. A method as in claim 16, wherein the anionic dye is present in the ink-jet ink at from 0.1 wt% to 6 wt%.

24. A method as in claim 16, wherein the cationic crashing agent is present in the fixer composition at from 1 wt% to 5 wt%.

25. A method as in claim 16, wherein the anionic dispersant polymer is a copolymer that includes both a hydrophobic and an anionic group.

26. A method as in claim 16, wherein the anionic dispersant polymer has a weight average molecular weight from 4,000 to 50,000 Mw.

5           27. A method as in claim 16, wherein the crashing agent is selected from the group consisting of cationic polymers, multivalent metal ions or ionic groups, acids, and combinations thereof.

10           28. A method as in claim 27, wherein the crashing agent is a cationic polymer selected from the group consisting of polyvinylpyridines, polyalkylaminoethyl acrylates, polyalkylaminoethyl methacrylates, poly(vinyl imidazole), polyethyleneimines, polybiguanides, polyguanides, polyvinylamines, polyallylamines, polyacrylamines, polyacrylamides, polyquaternaryamines, cationic polyurathenes, aminecelluloses, polysacchride amines, and  
15 combinations thereof.

          29. A method as in claim 27, wherein the crashing agent is a multivalent metal ion provided by a member selected from the group consisting of multivalent metal nitrate salts, EDTA salts, phosphonium halide salts, organic  
20 acid salts, chloride salts, and combinations thereof.

          30. A method as in claim 27, wherein the crashing agent is an acid selected from the group consisting of succinic acid, glycolic acid, citric acid, nitric acid, hydrochloric acid, phosphoric acid, sulfuric acid, polyacrylic acid, acetic acid, malonic acid, maleic acid, ascorbic acid, glutaric acid, fumaric acid,  
25 tartaric acid, lactic acid, nitrous acid, boric acid, carbonic acid, carboxylic acids such as formic acid, chloroacetic acid, dichloroacetic acid, trichloroacetic acid, fluoroacetic acid, trimethylacetic acid, methoxyacetic acid, mercaptoacetic acid, propionic acid, butyric acid, valeric acid, caprioc acid, caprylic acid, capric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, rinolic acid,  
30 rinoleic acid, cyclohexanecarboxylic acid, phenylacetic acid, benzoic acid, o-toluic acid, m-toluic acid, p-toluic acid, o-chlorobenzoic acid, m-chlorobenzoic

acid, p-chlorobenzoic acid, o-bromobenzoic acid, m-bromobenzoic acid, p-bromobenzoic acid, o-nitrobenzoic acid, m-nitrobenzoic acid, p-nitrobenzoic acid, oxalic acid, adipic acid, phthalic acid, isophthalic acid, terephthalic acid, salicylic acid, p-hydrobenzoic acid, anthranilic acid, m-aminobenzoic acid, p-aminobenzoic acid, benzenesulfonic acid, methylbenzenesulfonic acid, ethylbenzenesulfonic acid, dodecylbenzenesulfonic acid, 5-sulfosalicylic acid, 1-sulfonaphthalene, hexanesulfonic acid, octanesulfonic acid, dodecanesulfonic acid, amino acids such as glycine, alanine, valine,  $\alpha$ -aminobutyric acid,  $\alpha$ -aminobutyric acid,  $\alpha$ -alanine, taurine, serine,  $\alpha$ -amino-n-caprioc acid, leucine, norleucine, phenylalanine, and combinations thereof.